PATENT COOPERATION TREATY

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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing *(day/month/year)*	18 February 2005 (18.02.2005)
Applicant's or agent's file reference: OPP040181KR	FOR FURTHER ACTION: See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority Date *(day/month/year)*
PCT/KR 2004/002740	28 October 2004 (28.10.2004)	29 October 2003 (29.10.2003)

International Patent Classification (IPC) or both national classification and IPC
G02F 1/1365, 1/1343, G09G 3/36

Applicant
SAMSUNG ELECTRONICS CO., LTD.

1. This opinion contains indications relating to the following items:

- [x] Cont. No. I — Basis of the opinion
- [ ] Cont. No. II — Priority
- [ ] Cont. No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Cont. No. IV — Lack of unity of invention
- [x] Cont. No. V — Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- [ ] Cont. No. VI — Certain documents cited
- [ ] Cont. No. VII — Certain defects in the international application
- [ ] Cont. No. VIII — Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/KR 2004/002740

Continuation No. I

Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed.

Continuation No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims **1-7**	**YES**
	Claims **----**	**NO**
Inventive step (IS)	Claims **1-7**	**YES**
	Claims **----**	**NO**
Industrial applicability (IA)	Claims **1-7**	**YES**
	Claims **----**	**NO**

2. Citations and explanations:

The following documents are cited in the search report:

D1 EP 0 951 008 A2
D2 US 6 614 498 B1
D3 JP 08-022033 A

All cited references disclose liquid crystal displays driven by MIM switching elements.

In particular, D1 relates to the state of the art mentioned in the introductory part of the present application. Each pixel of the panel comprises two MIM elements which are symmetrically connected to the pixel electrode. First and second gate lines including first and second input electrodes are provided on a substrate while only one data line is connected to each pixel. First and second contact portions are connected to the pixel electrode and first and second channel insulating layers are formed on the first and second input electrode and on the first and second contact portions, respectively. In the embodiment, shown in Fig.10, two adjacent data lines are applied with signal voltages of opposite polarities to each other so that a dot inversion driving is achieved.

The subject matter of claim 1 of the application differs from this known LCD in that the data electrode lines include protrusions toward right and left sides by turns to overlap a predetermined number of pixel electrodes of the right and the left side by turns. This distinguishing feature is therefore new and since it is also not rendered obvious from the disclosure of D1 the subject matter of claim 1 is considered to comply with the requirements of novelty and inventive step.

Documents D2 relates to a colour LCD where the colour pixels are arranged in a delta configuration. A single data line drives sub-pixels for the three colours R,G,B and the pixel electrodes for all the three colours are arranged to the same side of the data line. The colour filter substrate comprises a black matrix formed between the three-colour layers and an overcoating layer is deposited on the black matrix and the colour filter. According to embodiment shown in Fig.8A,B, two MIM elements having opposite diode switching characteristics are provided for each pixel.

The pixels of the LCD according to D3 consist of two sub-pixels each driven by a MIM switching element. The data lines formed on an opposing substrate overlap the two sub-pixels of each of the picture elements, but do not overlap parts of adjacent pixels or sub-pixels. In Fig.3 and 4 of D3 a colour LCD having a black matrix is shown where an insulating layer is disposed between the colour filter and black matrix and the data electrode lines.

Likewise to D1, D2 and D3 do not disclose a configuration where the data electrode lines include protrusions toward right and left sides by turns to overlap a predetermined number of pixel electrodes of the right and the left sides by turns.

Hence, the subject matter of claim 1 of the application is considered new and to involve an inventive step with regard to the retrieved references.

Dependent claims 2 to 7 characterize preferred embodiments of the subject matter of claim 1 and are considered new and to involve an inventive step in combination with claim 1.